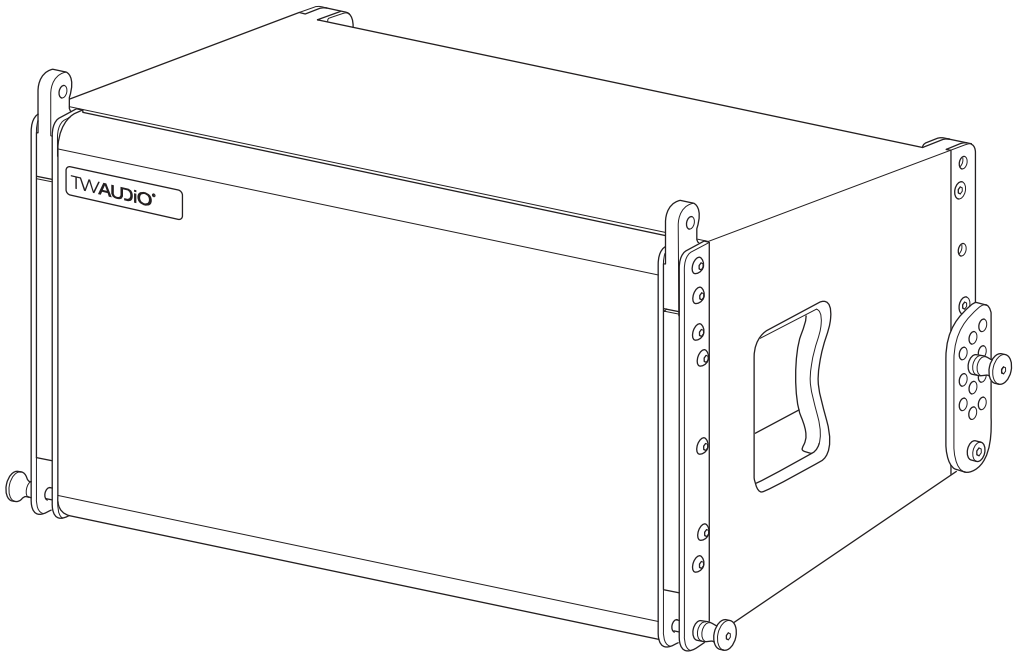
TWAUDIO®

VERA10 | Operating Manual



Introduction

Thank you for choosing a high quality product "MADE IN GERMANY" from TW AUDiO.

VERA10 is a vertical line array speaker system created for events that require high-quality answers to the following demands: visual subtlety and extremely compact dimensions, innovative output/size/weight ratios as well as quick and easy handling. Its other top priority, as put to us by many customers, is flexibility. We are very proud of the result: VERA10 is capable of covering events with an audience of 10 to 10.000 people with only a single loudspeaker model.

If you lend your product to another party, inform that party of the safety-related operating procedures and hand over this operating manual. If you require additional copies of this operating manual, they can be obtained free of charge from TW AUDiO or downloaded from: www.twaudio.de

Instructions in the operating manual

Strictly adhere to the instructions contained in this operating manual that are marked as follows:

This symbol in combination with the signal word "Warning" identifies a potentially hazardous situation. Failure to comply with this safety instruction can lead to serious injury or even death.

This symbol in combination with the signal word "Warning" identifies a potentially hazardous situation for persons with a pacemaker. Failure to comply with this safety instruction can lead to serious injury or even death.

This symbol in combination with the signal word "Caution" identifies a potentially hazardous situation. Failure to comply with this safety instruction can lead to light or moderate injury.

This symbol in combination with the signal word "Note" identifies a potentially hazardous situation. Failure to comply with this safety instruction can lead to product damage.

This symbol in combination with the signal word "Tip" identifies additional information or notes that will simplify working with TW AUDiO products on the basis of practical experience.

Notes on the products

Read manual before use!

Before setting up the device, read the operating manual carefully and keep this document in a safe place together with the VERA10 loudspeaker.

General information

Operating manual: OM-VERA10
Version 1.0 en, 11/2016

All information contained in this operating manual was correct to the best of our knowledge at the time of printing.

Quality warranties or assurance of suitability for a certain type of use based on the technical specifications, dimensions and weights are not granted by TW AUDiO.

TW AUDiO also shall not assume liability for any secondary damage (property damage and/or personal injury) nor for the failure to comply with this operating manual.

TW AUDiO reserves the right to make changes that take into account the latest engineering advancements.

TW AUDiO is pleased to receive suggestions for improvement and recommendations on this operating manual. Please send us any feedback you may have to the following e-mail address.

info@twaudio.de

TW AUDiO GmbH
Osterholzallee 140-2
71636 Ludwigsburg, Germany

Telephone: +49 (0) 71 41 - 48 89 89 0
Telefax: +49 (0) 71 41 - 48 89 89 99

Contents

1. Safety | Intended use

Please adhere to the following safety instructions to avoid risks when operating the loudspeakers.

The VERA10 loudspeaker was developed for professional use in sound systems. The loudspeaker may only be used by trained and qualified personnel.

Note the operating modes described in this operating manual.
Other uses are not permissible.

TW AUDiO GmbH shall not be held liable for any damage that ensues from unintended use.

WARNING

Loudspeakers generate an electromagnetic field. Persons with pacemakers are not permitted to remain in the immediate vicinity of loudspeakers as the electromagnetic fields can cause pacemakers to malfunction.

WARNING

When working with heavy loads over 20 kg [44,09 lbs], use suitable aids (dollies, hoisting slings, etc.). Multiple people may be required depending on the situation.

Ensure that the units are in a stable position and are firmly attached. A falling loudspeaker can result in serious personal injury and property damage.

When using and assembling TW AUDiO loudspeakers, only use materials specified by TW AUDiO. These tasks must be performed by qualified personnel. Adhere to the applicable safety regulations.

NOTE

When using the loudspeakers, ensure that they are not exposed to the following ambient conditions:

- Direct sunlight
- Moisture
- Jolting
- Dust

WARNING

Keep away from the immediate vicinity of loudspeakers that are operated at high sound pressure levels. These loudspeaker systems are capable of endangering your health. Sound levels beginning as low as approx. 90 dB SPL can lead to long-term hearing impairment.

NOTE

Avoid:

- Feedback
- Distorted signals (clipping)
- Peaks that result when devices are switched on or hot plugged and unplugged.

These signals can lead to loudspeaker overload..

WARNING

Ensure that the loudspeaker is not exposed to permanent thermal overloads. This may cause a fire and result in serious personal injury and property damage.

Note that TW AUDiO does not provide a warranty for damage that can be attributed to this type of overload and therefore cannot be held liable for any secondary damage.

NOTE

A permanent, magnetic field is present in the immediate vicinity of loudspeakers. Ensure that objects which react sensitively to magnetic fields are not located in the immediate vicinity of the loudspeaker. In particular, this applies to magnetic data carriers, EC cards and CRT displays. A distance of approx. one meter is sufficient to avoid damage.

NOTE

Check loudspeakers and accessory parts regularly for visible wear. This is essential to ensure fault-free operation on a permanent basis. Replace worn parts promptly. Spare parts can be obtained from TW AUDiO.

2. Overview

2.1 Components

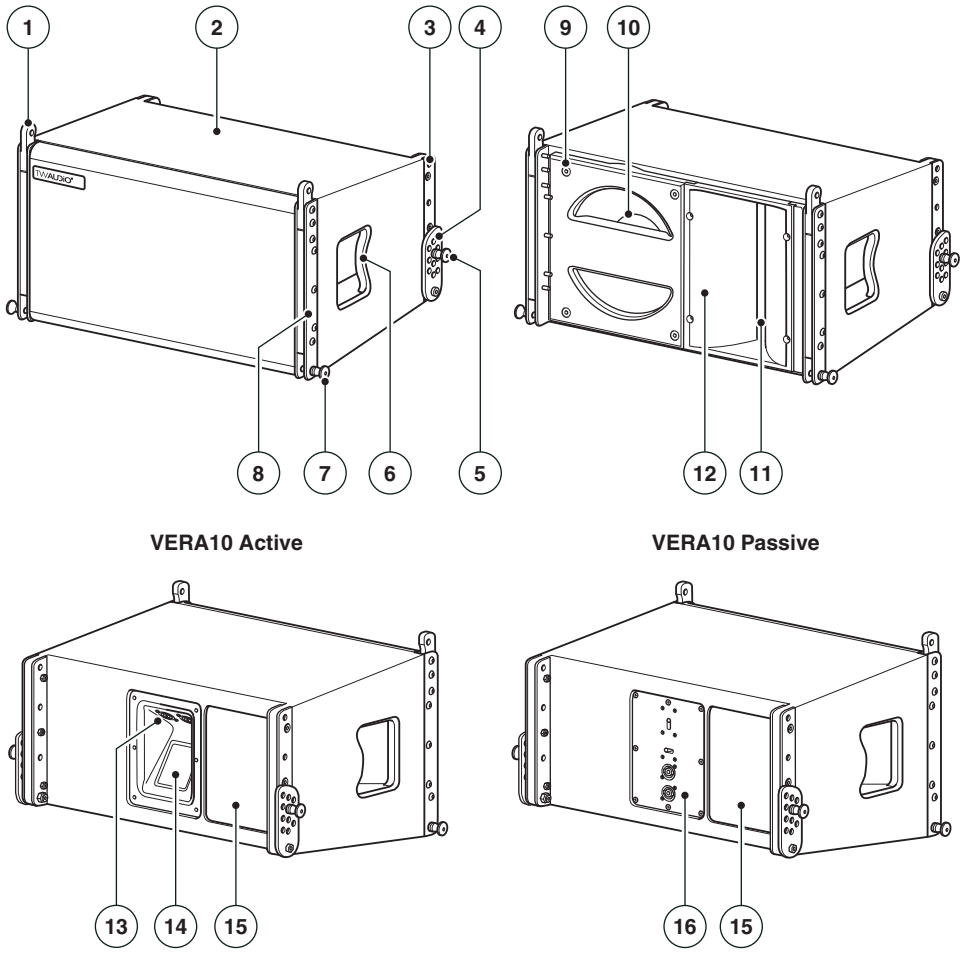


Figure 2.1 - Overview

1. Front eyelet
2. 15 mm multiplex enclosure – polyurea finish
3. VERA10 "rear" rigging plate
4. Splay link
5. Locking pin 8 × 30
6. Ergonomic carrying handles (left and right)
7. Locking pin 8 × 20
8. VERA10 "front" rigging plate
9. Phase plug
10. 10" cone drivers
11. Waveguide with two 1" compression drivers
12. Exchangeable horn
13. Standard connection panel with two speakON® connectors
14. Type label
15. Label plate
16. Passive crossover PWV10

2.2 Variants

The VERA10 loudspeaker comes in four different variants. These are differentiated by their horizontal coverage (80° or 120°) and are further subdivided into VERA10A (BI-AMP model) and VERA10P (PASSIVE model).

2.2.1. Horn – horizontal coverage 80°/120°

The VERA10 loudspeaker can be equipped with either an 80° × 10° horn or a 120° × 10° horn. The degrees refer to the horizontal and vertical radiation angles. The VERA10 horn variant can be identified by the legend printed on the horn (see figure 2.2).

The horn can be exchanged for the other type at any time. See section 4.2 "Exchanging the horn".

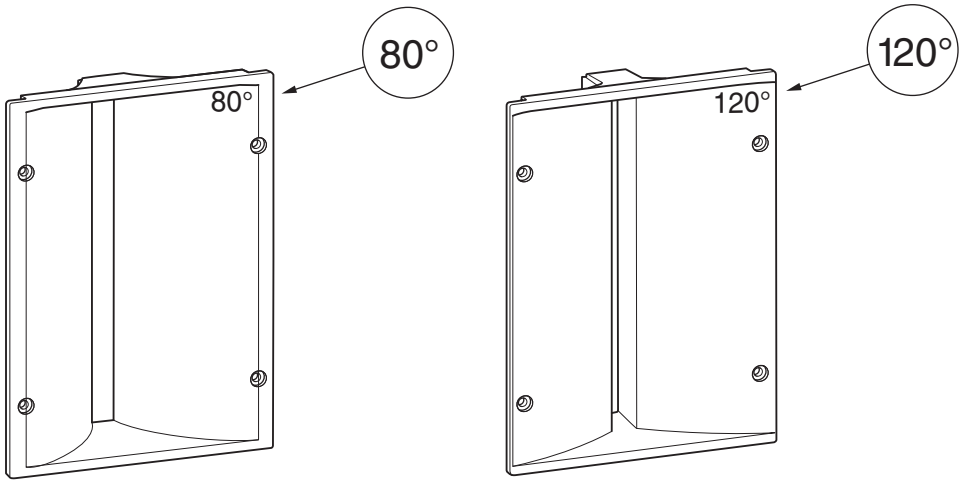


Figure 2.2 - VERA10 horn variants

2.2.2. VERA10A/VERA10P models

The standard model of the VERA10 loudspeaker is the VERA10A, which can only be operated in the "biamped" mode. It is supplied with a standard connection panel and requires two amplifier channels for operation. The compression driver and cone driver are separated by the DSP of the amplifier.

The VERA10P model can additionally be switched to the "passive" mode. This enables operation with only one amplifier channel, for which the enclosure contains a passive crossover. The built-in passive crossover features 2 selector switches described in section 2.3.

2.3 Operating modes

The passive version (VERA10P) features two selector switches on the rear (figure 2.3.1) for switching between two different operating modes and for attenuating the high frequency range (see figure 2.1, no. 16).

2.3.1. Horizontal selector switch

In the "PASSIVE" mode, the loudspeaker is operated on a passive audio crossover with a single amplifier channel.

In the "BIAMP" mode, the internal passive crossover bypasses the signal path and the individual routes of the loudspeaker must be driven separately by two DSP channels.

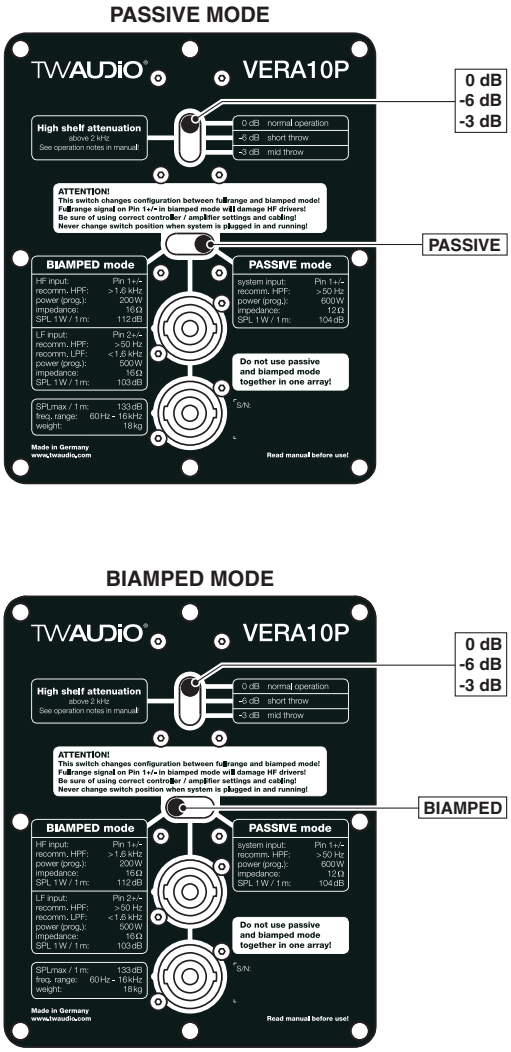


Figure 2.3.1 - VERA10P operating modes

NOTE

Never change the operating mode while the loudspeaker is connected. In addition to setting the switch, the corresponding preset on the amplifier must be changed.

Operating with an incorrect preset may damage parts of the loudspeaker.

2.3.2. Vertical selector switch

The "High shelf attenuation" vertical selector switch lowers the frequency range above 2 kHz independent of the VERA10P operating mode.

In the "0dB normal operation" mode, the frequency response is not attenuated above 2 kHz.

In the "-6dB short throw" mode, the frequency response above 2 kHz is attenuated by 6 dB.

In the "-3dB mid throw" mode, the frequency response above 2 kHz is attenuated by 3 dB.

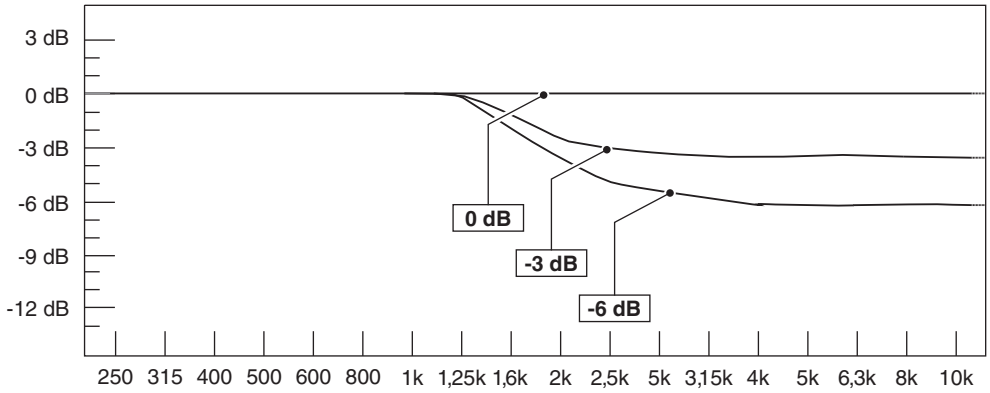


Figure 2.3.2 - High frequency range attenuation

3. Technical data

3.1 Data sheet

	Model		
	VERA10A	VERA10P	
Component	1 × 10" LF/ 2 × 1" HF		
Frequency response	60 – 16000 Hz		
Power handling, program/ peak	500/1000 W LF 200/400 W HF	BIAMP mode	PASSIVE mode
		500/1000 W LF 200/400 W HF	600/1200 W
Impedance	16 Ω LF 16 Ω HF	16 Ω LF 16 Ω HF	12 Ω
Coverage (h × v)	80° × 10° or 120° × 10° HF horn		
Max. SPL/1 m	133 dB		
Dimensions (h × w × d)	275 × 500 × 355 mm [10,83 × 19,69 × 13,98 in]		
Weight	16 kg [35,3 lbs]	18 kg [39,7 lbs]	
Finish	Polyurea coating		

3.2 Wiring diagram

Version: VERA10A

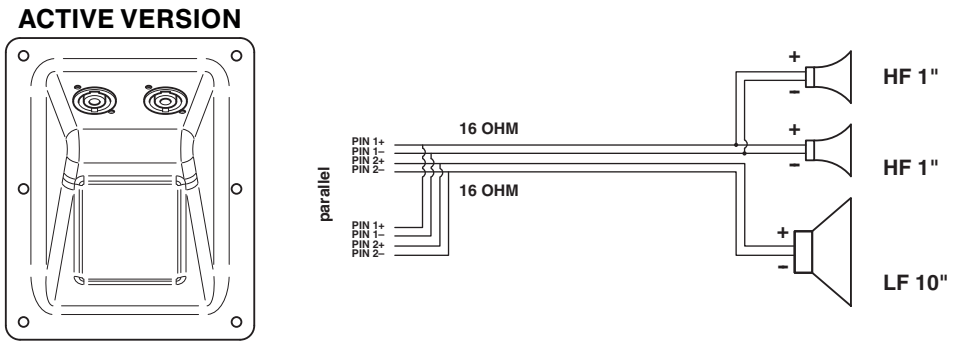


Figure 3.2.1 - VERA10A wiring diagram

Version: VERA10P

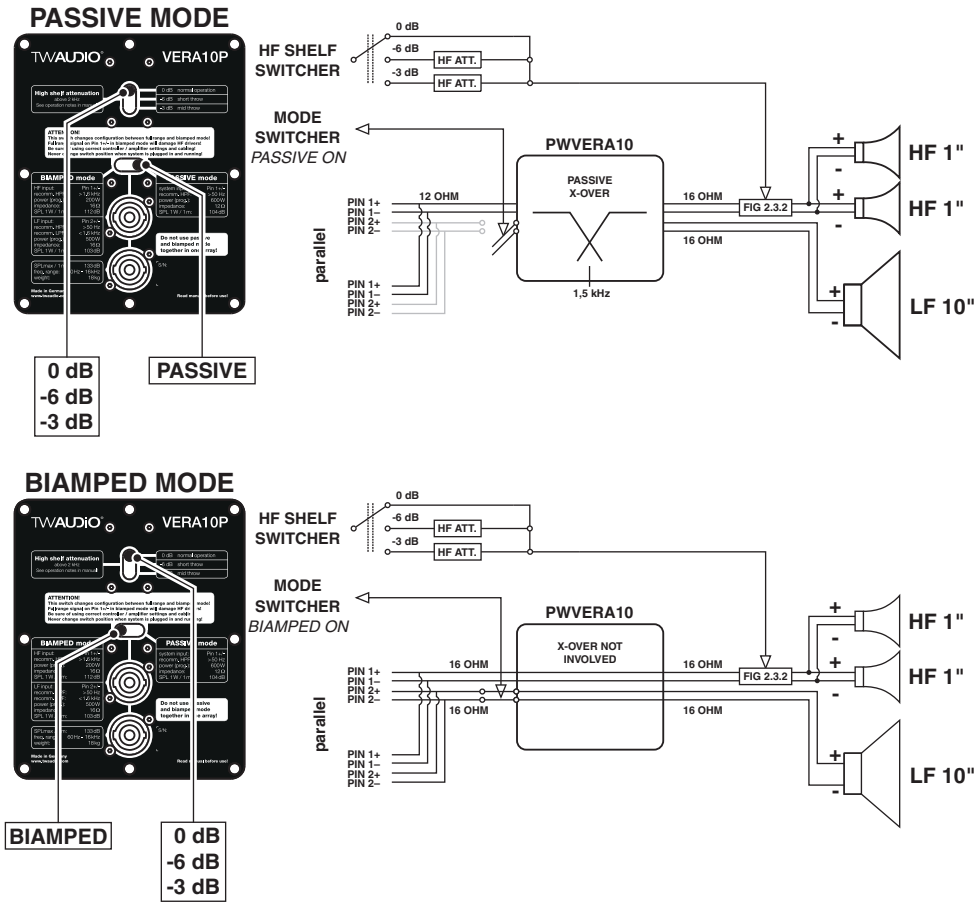


Figure 3.2.2 - VERA10P wiring diagram

4. Setting up the loudspeaker

4.1 Setup

The VERA10 loudspeaker is designed for horizontal operation in a suspended or standing position. A variety of accessories is available from TW AUDiO to securely attach the loudspeaker, e.g. on stands or suspended from trusses and chain/motor hoists. Vertical operation is not intended.

WARNING

Ensure that the loudspeakers are securely attached to prevent personal injury and property damage. Secure stacked loudspeakers properly so that they can be tipped by 10° in any direction without toppling.

NOTE

TW AUDiO recommends using only the accessories specified by TW AUDiO to secure the loudspeakers.

4.2 Exchanging the horn

Depending on the variant, either the 80° × 10° or the 120° × 10° horn (see section 2.2.1) is built into the VERA10 loudspeaker. For some applications, it may be advantageous to exchange the horn for the other variant in order to change the horizontal coverage. Proceed as follows.

1. Place the VERA10 loudspeaker on its back with the front grill facing up. Ensure that you are working on a clean and non-slip surface.
2. To remove the front grill of the loudspeaker, use a 3 mm hex key. Remove the four fastening screws on the left and right of the loudspeaker enclosure (two on each side).
3. Release the four screws of the horn using a 3 mm hex key. Pull the horn upward out of the loudspeaker enclosure.
4. Check that the sealing lip between the waveguide and horn is properly seated.
5. Insert the new horn in the opening. Screw it onto the enclosure using medium-strength thread locker.
6. Screw the front grill back on.

4.3 Connecting cables

To create a cable connection with an amplifier rack from TW AUDiO, proceed as follows.

Ensure that the cable cross section is sufficiently large (at least 1.5 mm²) to avoid power losses. TW AUDiO recommends using the loudspeaker cables available from TW AUDiO.

When connecting the cables to the loudspeaker, ensure that the polarity (+/-) and pin assignment (1/2) are correct. Incorrect connection results in a significant change in the loudspeaker sound characteristics and may damage the compression driver.

The pin connections of the VERA10 loudspeaker can be found in section 3.2 “Wiring diagram” on page 7.

The two speakON® NL4 connectors on the back of VERA10 can be used to link multiple loudspeakers on a single amplifier output. Note that parallel connection reduces the total impedance (Ω) seen by the amplifier.

The total impedance of loudspeakers connected in parallel must not drop below the minimum operating impedance of the amplifier.

4.4 Operation

A VERA10 loudspeaker can only be operated with a DSP controller. TW AUDiO only recommends using presets developed by TW AUDiO. The TW AUDiO system racks are ideal for this purpose.

Ensure that the preset that matches the chosen operating mode (see section 2.3) is recalled before connecting the loudspeaker to the amplifier.

Operating with an incorrect preset can damage parts of the loudspeaker.

Ensure that the amplifier is properly sized according to requirements. Undersizing or oversizing may damage the loudspeaker.

Please note the technical data in section 3.1.

5. Transport and storage

NOTE

To enable a single person to transport multiple VERA10 loudspeakers, TW AUDiO recommends using the FDB30 front dolly. Alternatively, the VERA10 can also be transported in a CaseVERA10 flight case.

When transporting and storing the unit, it is important to ensure that the surface and front grill of the loudspeaker are not damaged. Moisture can penetrate through exposed wood surfaces and cause the wood to swell. A bent or broken front grill will no longer adequately protect the sensitive speaker membranes.

In addition, appreciable dust deposits may considerably impair the functionality of a loudspeaker membrane. For this reason, the loudspeakers should be transported and stored in a safe, careful, dry and largely dust-free manner.

The following accessory parts for transport and storage are available from TW AUDiO:

- VERA DL10 (dolly for up to 12 VERA10)
- CaseVERA10 (flight case for 2 × 2 VERA10 elements)

The original packaging is unsuitable as permanent storage and transport packaging.

6. CE Conformity Declaration

Copy and translation of the original CE Conformity Declaration:

We hereby declare that the below-referenced components by virtue of their design and construction, and in the configuration placed on the market by us, satisfy the safety and health requirements of the applicable EC directives. This declaration becomes invalid in case of modifications that have not been approved by us.

This declaration applies to the following components:

- VERA10A-80
- VERA10A-120
- VERA10P-80
- VERA10P-120

as well as all model variants based on these, provided that they correspond to the original factory models and have not been technically modified in any way.

Applicable directives:

- 2001/95/EC
- 2011/65/EU

Applicable national standards and technical specifications:

- DIN 18800
- DIN 4113
- DIN EN ISO 14121-1
- BGV C1/BGI 810-3
- EN 50581:2012

Ludwigsburg, Germany, 01 Juli 2011

Tobias Wüstner

7. Disposal

It is prohibited to dispose of used electrical equipment with household refuse.

All products of TW AUDiO GmbH are so-called B2B products. This means that they are sold by a commercial business to a commercial business. TW AUDiO products that bear the trash can symbol shown here are only permitted to be disposed of by TW AUDiO.

The loudspeaker owner is legally responsible for the disposal of used devices that do not bear this symbol. This pertains to all products delivered prior to 29 March 2010. Nevertheless, TW AUDiO will also be happy to assist you in this case.

If you have any question regarding the disposal of used devices, please contact us under the following telephone number:

+49 (0) 71 41 - 48 89 89 0

Thus, TW AUDiO is in strict compliance with the Waste Electrical and Electronic Equipment Directive (2012/19/EU) for the protection of our environment.

TW AUDiO is registered under the following WEEE reg. no. with the German National Register EAR as a B2B manufacturer and distributor of electrical devices:

DE54488702

In countries outside of the European Union, follow the local regulations.

TW AUDiO GmbH
Osterholzallee 140-2
71636 Ludwigsburg
Germany

P: + 49 (0) 71 41-48 89 89 0
F: + 49 (0) 71 41-48 89 89 99
E: info@twaudio.de
W: www.twaudio.de